

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please Cancel Claims 2, 13, 17, 20 and 21.

Please add Claims 22, 23, 24, 25 and 26.

LISTING OF THE CLAIMS:

1 1 (Currently amended). A self-locking bolt assembly comprising:

2 (a) a bolt including a threaded shank, an axial bore extending through the
3 shank, the bore including a threaded bore section, a tapered end section, and a bore midsection
4 between the threaded bore section and the tapered end section;

5 (b) a screw set pin including a screw section having threads for engaging the
6 threaded bore section and a pin shaft having a tapered end section for engaging the tapered end
7 section of the bore, the pin shaft having a proximal end attached to the screw section, the pin
8 shaft being sufficiently long to ensure that when the tapered distal end section engages the
9 tapered end section of the bore the screw set pin then can be screwed a predetermined distance

10 further into the bore without galling threads of the screw section and the threaded bore section[.],
11 and

12 (c) said tapered end section of the pin shaft having a taper angle that is less
13 than a taper angle of the tapered end section of the bore to allow a narrowed end portion of the
14 tapered end section of the pin shaft to engage a narrowed end portion of the tapered end section
15 of the bore.

2 (Canceled).

1 3 (Currently amended). The self-locking bolt assembly of claim 2 1 including a
2 plurality of slits extending through a distal end section of the shank that includes the tapered end
3 section of the bore.

1 4 (Original). The self-locking bolt assembly of claim 3 wherein the plurality of slits
2 includes a pair of diametrically opposed slits.

1 5 (Original). The self-locking bolt assembly of claim 1 wherein a proximal end of the
2 screw set pin includes a feature for applying torque to the screw set pin.

1 6 (Original). The self-locking bolt assembly of claim 5 wherein the torque-applying
2 feature includes a key opening for receiving a torque-applying device.

1 7 (Original). The self-locking bolt assembly of claim 1 wherein the pin shaft has a
2 diameter that is less than a diameter of the threaded bore section to allow the pin shaft to pass
3 through the threaded bore section without engaging threads thereof.

1 8 (Original). The self-locking bolt assembly of claim 1 wherein the bolt includes a bolt
2 head attached to the shank, and wherein the bore extends through the bolt head.

1 9 (Original). The self-locking bolt assembly of claim 1 including a body having a
2 threaded bolt-receiving hole therein, with the screw set pin tightened sufficiently into the bolt to
3 cause the tapered end section of the pin shaft to expand a distal end section of the shank enough
4 that threads of the shank tightly engage threads of the bolt-receiving hole and become locked

5 into the body.

1 10 (Original). The self-locking bolt assembly of claim 3 including a
2 threaded bolt-receiving hole therein, with the screw set pin tightened sufficiently into the bolt to
3 cause the tapered end section of the pin shaft to sufficiently expand fingers defined by the slits
4 that central contact areas of the fingers elastically deform and dig into the bolt-receiving hole
5 enough to securely lock the bolt to the body.

1 11 (Original). The self-locking bolt assembly of claim 10 wherein edge contact areas of
2 the fingers deform and dig into the tapered end section of the pin shaft enough to securely lock
3 the screw set pin to the bolt.

1 12 (Currently amended). A method of using a self-locking bolt assembly including a
2 bolt including a threaded shank having an axial bore extending through the shank for receiving a
3 screw set pin including a screw section having threads for engaging a threaded bore section of
4 the bore, the screw set pin also including a tapered end section, the method comprising:

5 (a) providing a bore midsection between the threaded bore section and the

6 tapered end section; and

7 (b) providing a pin shaft having one end attached to the screw section and a
8 tapered end section for engaging the tapered end section of the bore, the pin shaft being
9 sufficiently long to ensure that when the tapered distal end section of the pin shaft engages the
10 tapered end section of the bore the screw set pin then can be tightened a predetermined distance
11 further into the bore without galling threads of the screw section and the threaded bore section[.];
12 and

13 (c) screwing the screw set pin sufficiently far into the bolt enough to abut the
14 tapered end section of the pin shaft against the tapered end section of the bore, and causing only
15 a narrowed end portion of the tapered end section of the pin shaft to engage a narrowed end
16 portion of the tapered end section of the bore by providing the tapered end section of the pin
17 shaft with a taper angle that is less than a taper angle of the tapered end section of the bore.

13 (Canceled).

1 14 (Original). The method of claim 12 including providing a plurality of slits extending
2 through a distal end section of the shank including the tapered end section of the bore.

1 15 (Original). The method of claim 12 wherein the diameter of the pin shaft has a
2 diameter that is less than a diameter of the threaded bore section of the bore, the method
3 including advancing the pin shaft through the threaded bore section without engaging threads
4 thereof.

1 16 (Original). The method of claim 14 including locking the self-locking bolt assembly
2 into a threaded bolt-receiving hole in a body by tightening the screw set pin sufficiently far into
3 the bolt to cause the tapered end section of the pin shaft to sufficiently expand fingers defined by
4 the slits that central contact areas of the fingers elastically deform and dig into the bolt-receiving
5 hole enough to securely lock the bolt to the body.

17 (Canceled).

1 18 (Original). A method of increasing a mechanical advantage of a self-locking bolt
2 assembly including a bolt including a threaded shank having an axial bore extending through the
3 shank for receiving a screw set pin including a screw section having threads for engaging a
4 threaded bore section of the bore, the screw set pin also including a tapered end section, the
5 method comprising:

6 (a) providing a bore midsection between the threaded bore section and the

7 tapered end section;

8 (b) providing a plurality of slits in a distal end section of the shank;

9 (c) providing a pin shaft having one end attached to the screw section and a

10 tapered end section for engaging the tapered end section of the bore, the pin shaft being

11 sufficiently long to ensure that when the tapered end section of the pin shaft engages the tapered

12 end section of the bore the screw set pin then can be screwed a predetermined distance further

13 into the bore without galling threads of the screw section and the threaded bore section; and

14 (d) providing an increased distance between proximal ends of the slits and a

15 contact area at which the tapered end section of the pin shaft engages the tapered end section of

16 the bore by providing the tapered end section of the pin shaft with a taper angle that is less

17 taper angle of the tapered end section of the bore.

1 19 (Currently amended). A self-locking bolt assembly comprising:

2 (a) a bolt including a threaded shank having an axial bore extending through

3 the shank for receiving a screw set pin including a screw section having threads for engaging a

4 threaded bore section of the bore, the screw set pin also including a tapered end section;

5 (b) a bore midsection between the threaded bore section and the tapered end
6 section; and

7 (c) means for engaging the tapered end section of the bore such that when the
8 tapered distal end section engages the tapered end section of the bore the screw set pin then can
9 be tightened a predetermined distance further into the bore without galling threads of the screw
10 section and the threaded bore section[.],

11 (d) means for screwing the screw set pin sufficiently far into the bolt to abut
12 the tapered end section of the pin shaft, without galling threads of the shank, and differential
13 taper means for causing only a narrowed end portion of the tapered end section of the pin shaft to
14 engage a narrowed end portion of the tapered end section of the bore; and

15 (e) differential radius means for locking the self-locking bolt assembly into a
16 threaded bolt-receiving hole in a body by tightening the screw set pin sufficiently far into the
17 bolt to cause the tapered end section of the pin shaft to sufficiently expand fingers defined by the
18 slits that central contact areas of the fingers elastically deform and dig into the bolt-receiving
19 hole enough to securely lock the bolt to the body and to cause edge contact areas of the fingers to
20 deform and dig into the tapered end section of the pin shaft enough to securely lock the screw set
21 pin to the bolt.

20 (Canceled)

21 (Canceled)

1 22 (New). A method of using a self-locking bolt assembly including a bolt including
2 a threaded shank having an axial bore extending through the shank for receiving a screw set pin
3 including a screw section having threads for engaging a threaded bore section of the bore, the
4 screw set pin also including a tapered end section, the method comprising:

5

6 (a) providing a bore midsection between the threaded bore section and the
7 tapered end section;

8

9 (b) providing a pin shaft having one end attached to the screw section and a
10 tapered end section for engaging the tapered end section of the bore, the pin shaft being
11 sufficiently long to ensure that when the tapered distal end section of the pin shaft engages the
12 tapered end section of the bore the screw set pin then can be tightened a predetermined distance
13 further into the bore without galling threads of the screw section and the threaded bore section;

14

15 (c) screwing the screw set pin sufficiently far into the bolt enough to abut the
16 tapered end section of the pin shaft against the tapered end section of the bore, and causing only
17 a narrowed end portion of the tapered end section of the pin shaft to engage a narrowed end
18 portion of the tapered end section of the bore by providing the tapered end section of the pin

19 shaft with a taper angle that is less than a taper angle of the tapered end section of the bore;

20

21 (d) providing a plurality of slits extending through a distal end section of the

22 shank including the tapered end section of the bore; and

23

24 (e) tightening the screw set pin sufficiently far into the bolt that edge contact

25 areas of the fingers deform and dig into the tapered end section of the pin shaft enough to

26 securely lock the screw set pin to the bolt.

1 23 (New). A self-locking bolt assembly, for locking the assembly in a threaded bolt-

2 receiving hole, comprising:

3 (a) a bolt including a threaded shank, an axial bore extending through the

4 shank, the bore including a threaded bore section, a tapered end section, and a bore midsection

5 between the threaded bore section and the tapered end section;

6 (b) a screw set pin including a screw section having threads for engaging the

7 threaded bore section and a pin shaft having a tapered end section for engaging the tapered end

8 section of the bore, the pin shaft having a proximal end attached to the screw section, the pin

1 shaft being sufficiently long to ensure that when the tapered distal end section engages the
2 tapered end section of the bore the screw set pin then can be screwed a predetermined distance
3 further into the bore without galling threads of the screw section and the threaded bore section;

4 (c) said tapered end section of the pin shaft having a taper angle that is less
5 than a taper angle of the tapered end section of the bore to allow a narrowed end portion of the
6 tapered end section of the pin shaft to engage a narrowed end portion of the tapered end section
7 of the bore;

8 (d) a plurality of slits extending through a distal end section of the shank that
9 includes the tapered end section of the bore; and

10 (e) differential radius means for locking the self-locking bolt assembly into
11 the threaded bolt-receiving hole in a body by tightening the screw set pin sufficiently far into the
12 bolt to cause the tapered end section of the pin shaft to sufficiently expand fingers defined by the
13 slits that central contact areas of the fingers elastically deform and dig into the bolt-receiving
14 hole enough to securely lock the bolt to the body and to cause edge contact areas of the fingers to
15 deform and dig into the tapered end section of the pin shaft enough to securely lock the screw set
16 pin to the bolt.

1 24 (New). A method of using a self-locking bolt assembly, for locking the bolt in a
2 threaded bolt-receiving hole, including a bolt including a threaded shank having an axial bore
3 extending through the shank for receiving a screw set pin including a screw section having
4 threads for engaging a threaded bore section of the bore, the screw set pin also including a
5 tapered end section, the method comprising:

6 (a) providing a bore midsection between the threaded bore section and the
7 tapered end section and a plurality of slits extending through a distal end section of the shank
8 that includes the tapered end section of the bore;

9 (b) providing a pin shaft having one end attached to the screw section and a
10 tapered end section for engaging the tapered end section of the bore, the pin shaft being
11 sufficiently long to ensure that when the tapered distal end section of the pin shaft engages the
12 tapered end section of the bore the screw set pin then can be tightened a predetermined distance
13 further into the bore without galling threads of the screw section and the threaded bore section;

14 (c) screwing the screw set pin sufficiently far into the bolt enough to abut the
15 tapered end section of the pin shaft against the tapered end section of the bore, and causing only
16 a narrowed end portion of the tapered end section of the pin shaft to engage a narrowed end
17 portion of the tapered end section of the bore by providing the tapered end section of the pin
18 shaft with a taper angle that is less than a taper angle of the tapered end section of the bore; and

1 (d) providing differential radius means for locking the self-locking bolt
2 assembly into a threaded bolt-receiving hole in a body by tightening the screw set pin
3 sufficiently far into the bolt to cause the tapered end section of the pin shaft to sufficiently
4 expand fingers defined by the slits that central contact areas of the fingers elastically deform and
5 dig into the bolt-receiving hole enough to securely lock the bolt to the body and to cause edge
6 contact areas of the fingers to deform and dig into the tapered end section of the pin shaft enough
7 to securely lock the screw set pin to the bolt.

1 25 (New). The self-locking bolt assembly of claim 3 including differential radius
2 means for locking the self-locking bolt assembly into a threaded bolt-receiving hole in a body by
3 tightening the screw set pin sufficiently far into the bolt to cause the tapered end section of the
4 pin shaft to sufficiently expand fingers defined by the slits that central contact areas of the
5 fingers elastically deform and dig into the bolt-receiving hole enough to securely lock the bolt to
6 the body and to cause edge contact areas of the fingers to deform and dig into the tapered end
7 section of the pin shaft enough to securely lock the screw set pin to the bolt.

1 26 (New). A self-locking bolt assembly comprising:

2 (a) a bolt including a threaded shank, an axial bore extending through the
3 shank, the bore including a threaded bore section, a tapered end section, and a bore midsection
4 between the threaded bore section and the tapered end section;

5 (b) a screw set pin including a screw section having threads for engaging the
6 threaded bore section and a pin shaft having a tapered end section for engaging the tapered end
7 section of the bore, the pin shaft having a proximal end attached to the screw section, the pin
8 shaft being sufficiently long to ensure that when the tapered distal end section engages the
9 tapered end section of the bore the screw set pin then can be screwed a predetermined distance
10 further into the bore without galling threads of the screw section and the threaded bore section;

11 (c) said tapered end section of the pin shaft having a taper angle that is less
12 than a taper angle of the tapered end section of the bore to allow a narrowed end portion of the
13 tapered end section of the pin shaft to engage a narrowed end portion of the tapered end section
14 of the bore; and

15 (d) means for locking the set screw pin to the bolt when a tapered end section
16 of the pin shaft engages the tapered end section of the bore.